



3440 South 700 West  
Salt Lake City, UT 84119

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e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

Lenora Sullivan  
Utah Division of Water Quality  
PO Box 144870  
SLC, UT 84114  
TEL: (801) 538-6329

RE: Gold King Mine - San Juan River Sampling

Dear Lenora Sullivan:

Lab Set ID: 1508302

American West Analytical Laboratories received sample(s) on 8/15/2015 for the analyses presented in the following report.

American West Analytical Laboratories (AWAL) is accredited by The National Environmental Laboratory Accreditation Program (NELAP) in Utah and Texas; and is state accredited in Colorado, Idaho, New Mexico, Wyoming, and Missouri.

All analyses were performed in accordance to the NELAP protocols unless noted otherwise. Accreditation scope documents are available upon request. If you have any questions or concerns regarding this report please feel free to call.

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit. Analytical results are reported to three significant figures for quality control and calculation purposes.

Thank You,

**Kyle F. Gross** Digitally signed  
by Kyle F. Gross  
Date:  
2015.08.16  
12:38:36 -06'00'

Approved by:

Laboratory Director or designee



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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-001  
**Client Sample ID:** San Juan R at Mexican Hat US163 Xing (4953000)  
**Collection Date:** 8/15/2015 943h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

### TOTAL METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/15/2015 2233h	8/16/2015 342h	E200.7	0.237	1.00	63.7	<sup>2</sup>
Antimony	7440-36-0	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.0000366	0.00200	0.00116	J <sup>1</sup>
Arsenic	7440-38-2	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.0000920	0.00200	0.0168	
Barium	7440-39-3	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.000538	0.00200	1.62	<sup>2</sup>
Beryllium	7440-41-7	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.0000288	0.00200	0.00729	
Cadmium	7440-43-9	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.000193	0.000500	0.00146	
Calcium	7440-70-2	mg/L	8/15/2015 2233h	8/16/2015 342h	E200.7	0.401	10.0	207	<sup>2</sup>
Chromium	7440-47-3	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.00154	0.00200	0.0298	
Cobalt	7440-48-4	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.0000434	0.00400	0.0355	
Copper	7440-50-8	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.000692	0.00200	0.0790	
Iron	7439-89-6	mg/L	8/15/2015 2233h	8/16/2015 404h	E200.7	0.0767	0.100	45.1	<sup>2</sup>
Lead	7439-92-1	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.000264	0.00200	0.0867	
Magnesium	7439-95-4	mg/L	8/15/2015 2233h	8/16/2015 404h	E200.7	0.0294	1.00	40.7	B
Manganese	7439-96-5	mg/L	8/15/2015 2233h	8/16/2015 355h	E200.8	0.00764	0.0100	2.33	
Mercury	7439-97-6	mg/L	8/15/2015 2245h	8/16/2015 703h	E245.1	0.00000892	0.000150	0.000198	B
Molybdenum	7439-98-7	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.000206	0.00200	0.000957	J <sup>1</sup>
Nickel	7440-02-0	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.000754	0.00200	0.0478	
Potassium	7440-09-7	mg/L	8/15/2015 2233h	8/16/2015 404h	E200.7	0.247	1.00	14.0	
Selenium	7782-49-2	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.0000634	0.00200	0.00157	J
Silver	7440-22-4	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.0000244	0.00200	0.000631	J
Sodium	7440-23-5	mg/L	8/15/2015 2233h	8/16/2015 342h	E200.7	0.330	10.0	59.6	
Thallium	7440-28-0	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.0000242	0.00200	0.000862	J
Vanadium	7440-62-2	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.000438	0.00440	0.0755	
Zinc	7440-66-6	mg/L	8/15/2015 2233h	8/16/2015 309h	E200.8	0.00476	0.00500	0.220	

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

<sup>2</sup> - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.

B - This analyte was also detected in the method blank below the PQL.

J - Estimated value between the MDL and the reporting limit (PQL).



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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-002  
**Client Sample ID:** San Juan R at Sand Island (4953250)  
**Collection Date:** 8/15/2015 1030h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

### TOTAL METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/15/2015 2233h	8/16/2015 415h	E200.7	0.0237	0.100	37.6	
Antimony	7440-36-0	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.0000366	0.00200	0.000394	J
Arsenic	7440-38-2	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.0000920	0.00200	0.0112	
Barium	7440-39-3	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.000538	0.00200	0.826	
Beryllium	7440-41-7	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.0000288	0.00200	0.00410	
Cadmium	7440-43-9	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.000193	0.000500	0.000984	
Calcium	7440-70-2	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.7	0.401	10.0	108	
Chromium	7440-47-3	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.00154	0.00200	0.0207	
Cobalt	7440-48-4	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.0000434	0.00400	0.0222	
Copper	7440-50-8	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.000692	0.00200	0.0576	
Iron	7439-89-6	mg/L	8/15/2015 2233h	8/16/2015 415h	E200.7	0.0767	0.100	32.3	
Lead	7439-92-1	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.000264	0.00200	0.0540	
Magnesium	7439-95-4	mg/L	8/15/2015 2233h	8/16/2015 415h	E200.7	0.0294	1.00	23.1	B
Manganese	7439-96-5	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.00153	0.00200	1.23	
Mercury	7439-97-6	mg/L	8/15/2015 2245h	8/16/2015 705h	E245.1	0.00000892	0.000150	0.000163	B
Molybdenum	7439-98-7	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.000206	0.00200	0.00109	J
Nickel	7440-02-0	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.000754	0.00200	0.0278	
Potassium	7440-09-7	mg/L	8/15/2015 2233h	8/16/2015 415h	E200.7	0.247	1.00	9.22	
Selenium	7782-49-2	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.0000634	0.00200	0.00136	J
Silver	7440-22-4	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.0000244	0.00200	0.000514	J
Sodium	7440-23-5	mg/L	8/15/2015 2233h	8/16/2015 415h	E200.7	0.0330	1.00	51.0	
Thallium	7440-28-0	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.0000242	0.00200	0.000626	J
Vanadium	7440-62-2	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.000438	0.00440	0.0535	
Zinc	7440-66-6	mg/L	8/15/2015 2233h	8/16/2015 332h	E200.8	0.00476	0.00500	0.160	

B - This analyte was also detected in the method blank below the PQL.

J - Estimated value between the MDL and the reporting limit (PQL).



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Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-003  
**Client Sample ID:** San Juan River at Town of Montezuma  
**Collection Date:** 8/15/2015 1131h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

### TOTAL METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/15/2015 2233h	8/16/2015 417h	E200.7	0.0237	0.100	29.2	
Antimony	7440-36-0	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.0000366	0.00200	0.000329	J
Arsenic	7440-38-2	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.0000920	0.00200	0.00850	
Barium	7440-39-3	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.000538	0.00200	0.566	
Beryllium	7440-41-7	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.0000288	0.00200	0.00265	
Cadmium	7440-43-9	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.000193	0.000500	0.000806	
Calcium	7440-70-2	mg/L	8/15/2015 2233h	8/16/2015 350h	E200.7	0.401	10.0	90.2	
Chromium	7440-47-3	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.00154	0.00200	0.0155	
Cobalt	7440-48-4	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.0000434	0.00400	0.0150	
Copper	7440-50-8	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.000692	0.00200	0.0393	
Iron	7439-89-6	mg/L	8/15/2015 2233h	8/16/2015 417h	E200.7	0.0767	0.100	24.9	
Lead	7439-92-1	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.000264	0.00200	0.0365	
Magnesium	7439-95-4	mg/L	8/15/2015 2233h	8/16/2015 417h	E200.7	0.0294	1.00	19.7	B
Manganese	7439-96-5	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.00153	0.00200	0.862	
Mercury	7439-97-6	mg/L	8/15/2015 2245h	8/16/2015 715h	E245.1	0.00000892	0.000150	0.0000750	JB
Molybdenum	7439-98-7	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.000206	0.00200	0.00106	J
Nickel	7440-02-0	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.000754	0.00200	0.0187	
Potassium	7440-09-7	mg/L	8/15/2015 2233h	8/16/2015 417h	E200.7	0.247	1.00	7.88	
Selenium	7782-49-2	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.0000634	0.00200	0.000928	J
Silver	7440-22-4	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.0000244	0.00200	0.000245	J
Sodium	7440-23-5	mg/L	8/15/2015 2233h	8/16/2015 417h	E200.7	0.0330	1.00	39.4	
Thallium	7440-28-0	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.0000242	0.00200	0.000397	J
Vanadium	7440-62-2	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.000438	0.00440	0.0433	
Zinc	7440-66-6	mg/L	8/15/2015 2233h	8/16/2015 335h	E200.8	0.00476	0.00500	0.114	

B - This analyte was also detected in the method blank below the PQL.

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-004  
**Client Sample ID:** San Juan R at US160 Xing in CO (4954000)  
**Collection Date:** 8/15/2015 1204h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

### TOTAL METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/15/2015 2233h	8/16/2015 419h	E200.7	0.0237	0.100	14.2	
Antimony	7440-36-0	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.0000366	0.00200	0.000279	J
Arsenic	7440-38-2	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.0000920	0.00200	0.00470	
Barium	7440-39-3	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.000538	0.00200	0.262	
Beryllium	7440-41-7	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.0000288	0.00200	0.00108	J
Cadmium	7440-43-9	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.000193	0.000500	0.000366	J
Calcium	7440-70-2	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.7	0.401	10.0	68.1	
Chromium	7440-47-3	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.00154	0.00200	0.00875	
Cobalt	7440-48-4	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.0000434	0.00400	0.00618	
Copper	7440-50-8	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.000692	0.00200	0.0182	
Iron	7439-89-6	mg/L	8/15/2015 2233h	8/16/2015 419h	E200.7	0.0767	0.100	12.3	
Lead	7439-92-1	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.000264	0.00200	0.0174	
Magnesium	7439-95-4	mg/L	8/15/2015 2233h	8/16/2015 419h	E200.7	0.0294	1.00	12.7	B
Manganese	7439-96-5	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.00153	0.00200	0.368	
Mercury	7439-97-6	mg/L	8/15/2015 2245h	8/16/2015 656h	E245.1	0.00000892	0.000150	0.0000300	JB
Molybdenum	7439-98-7	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.000206	0.00200	0.00113	J
Nickel	7440-02-0	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.000754	0.00200	0.00878	
Potassium	7440-09-7	mg/L	8/15/2015 2233h	8/16/2015 419h	E200.7	0.247	1.00	5.16	
Selenium	7782-49-2	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.0000634	0.00200	0.000626	J
Silver	7440-22-4	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.0000244	0.00200	0.000141	J
Sodium	7440-23-5	mg/L	8/15/2015 2233h	8/16/2015 419h	E200.7	0.0330	1.00	27.7	
Thallium	7440-28-0	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.0000242	0.00200	0.000194	J
Vanadium	7440-62-2	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.000438	0.00440	0.0257	
Zinc	7440-66-6	mg/L	8/15/2015 2233h	8/16/2015 348h	E200.8	0.00476	0.00500	0.0589	

B - This analyte was also detected in the method blank below the PQL.

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-005  
**Client Sample ID:** SJR @ Clay Hills  
**Collection Date:** 8/15/2015 1430h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

### TOTAL METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/15/2015 2233h	8/16/2015 355h	E200.7	0.237	1.00	<b>154</b>	
Antimony	7440-36-0	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.0000366	0.00200	0.000281	J
Arsenic	7440-38-2	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.0000920	0.00200	<b>0.0366</b>	
Barium	7440-39-3	mg/L	8/15/2015 2233h	8/16/2015 406h	E200.8	0.00269	0.0100	<b>4.17</b>	
Beryllium	7440-41-7	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.0000288	0.00200	<b>0.0166</b>	
Cadmium	7440-43-9	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.000193	0.000500	<b>0.00288</b>	
Calcium	7440-70-2	mg/L	8/15/2015 2233h	8/16/2015 635h	E200.7	4.01	100	<b>960</b>	
Chromium	7440-47-3	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.00154	0.00200	<b>0.0553</b>	
Cobalt	7440-48-4	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.0000434	0.00400	<b>0.0631</b>	
Copper	7440-50-8	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.000692	0.00200	<b>0.0932</b>	
Iron	7439-89-6	mg/L	8/15/2015 2233h	8/16/2015 421h	E200.7	0.0767	0.100	<b>54.0</b>	
Lead	7439-92-1	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.000264	0.00200	<b>0.175</b>	
Magnesium	7439-95-4	mg/L	8/15/2015 2233h	8/16/2015 355h	E200.7	0.294	10.0	<b>110</b>	B
Manganese	7439-96-5	mg/L	8/15/2015 2233h	8/16/2015 406h	E200.8	0.00764	0.0100	<b>5.74</b>	
Mercury	7439-97-6	mg/L	8/15/2015 2245h	8/16/2015 717h	E245.1	0.00000892	0.000150	<b>0.000330</b>	B
Molybdenum	7439-98-7	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.000206	0.00200	0.000734	J
Nickel	7440-02-0	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.000754	0.00200	<b>0.110</b>	
Potassium	7440-09-7	mg/L	8/15/2015 2233h	8/16/2015 421h	E200.7	0.247	1.00	<b>33.0</b>	
Selenium	7782-49-2	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.0000634	0.00200	<b>0.00238</b>	
Silver	7440-22-4	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.0000244	0.00200	0.000923	J
Sodium	7440-23-5	mg/L	8/15/2015 2233h	8/16/2015 355h	E200.7	0.330	10.0	<b>82.9</b>	
Thallium	7440-28-0	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.0000242	0.00200	0.00101	J
Vanadium	7440-62-2	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.000438	0.00440	<b>0.116</b>	
Zinc	7440-66-6	mg/L	8/15/2015 2233h	8/16/2015 352h	E200.8	0.00476	0.00500	<b>0.294</b>	

B - This analyte was also detected in the method blank below the PQL.

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-001  
**Client Sample ID:** San Juan R at Mexican Hat US163 Xing (4953000)  
**Collection Date:** 8/15/2015 943h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

### DISSOLVED METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/15/2015 2330h	8/16/2015 437h	E200.7	0.0237	0.100	<b>0.135</b>	
Antimony	7440-36-0	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.0000366	0.00200	0.00104	J
Arsenic	7440-38-2	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.0000920	0.00200	0.00170	JB
Barium	7440-39-3	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.000538	0.00200	<b>0.117</b>	
Beryllium	7440-41-7	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.0000288	0.00200	0.0000320	J
Cadmium	7440-43-9	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.000193	0.000500	< 0.000500	U
Calcium	7440-70-2	mg/L	8/15/2015 2330h	8/16/2015 503h	E200.7	0.401	10.0	<b>53.7</b>	
Chromium	7440-47-3	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.00154	0.00200	< 0.00200	U
Cobalt	7440-48-4	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.0000434	0.00400	0.000575	J
Copper	7440-50-8	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.000692	0.00200	<b>0.00856</b>	
Iron	7439-89-6	mg/L	8/15/2015 2330h	8/16/2015 437h	E200.7	0.0767	0.100	< 0.100	U
Lead	7439-92-1	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.000264	0.00200	< 0.00200	U
Magnesium	7439-95-4	mg/L	8/15/2015 2330h	8/16/2015 437h	E200.7	0.0294	1.00	<b>9.03</b>	
Manganese	7439-96-5	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.00153	0.00200	<b>0.00742</b>	
Mercury	7439-97-6	mg/L	8/15/2015 2330h	8/16/2015 727h	E245.1	0.00000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.000206	0.00200	<b>0.00328</b>	
Nickel	7440-02-0	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.000754	0.00200	0.00166	J
Potassium	7440-09-7	mg/L	8/15/2015 2330h	8/16/2015 437h	E200.7	0.247	1.00	<b>3.62</b>	
Selenium	7782-49-2	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.0000634	0.00200	0.00119	J
Silver	7440-22-4	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.0000244	0.00200	0.000192	J
Sodium	7440-23-5	mg/L	8/15/2015 2330h	8/16/2015 503h	E200.7	0.330	10.0	<b>51.9</b>	
Thallium	7440-28-0	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.0000242	0.00200	0.0000557	J
Vanadium	7440-62-2	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.000438	0.00440	<b>0.00565</b>	
Zinc	7440-66-6	mg/L	8/15/2015 2330h	8/16/2015 416h	E200.8	0.00476	0.00500	<b>0.00618</b>	

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-002  
**Client Sample ID:** San Juan R at Sand Island (4953250)  
**Collection Date:** 8/15/2015 1030h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

### DISSOLVED METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/15/2015 2330h	8/16/2015 447h	E200.7	0.0237	0.100	0.0952	J
Antimony	7440-36-0	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.0000366	0.00200	0.00112	J
Arsenic	7440-38-2	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.0000920	0.00200	0.00184	JB
Barium	7440-39-3	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.000538	0.00200	<b>0.0835</b>	
Beryllium	7440-41-7	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.0000288	0.00200	0.0000411	J
Cadmium	7440-43-9	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.000193	0.000500	< 0.000500	U
Calcium	7440-70-2	mg/L	8/15/2015 2330h	8/16/2015 447h	E200.7	0.0401	1.00	<b>55.7</b>	
Chromium	7440-47-3	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.00154	0.00200	< 0.00200	U
Cobalt	7440-48-4	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.0000434	0.00400	0.0000850	J
Copper	7440-50-8	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.000692	0.00200	<b>0.00227</b>	
Iron	7439-89-6	mg/L	8/15/2015 2330h	8/16/2015 447h	E200.7	0.0767	0.100	< 0.100	U
Lead	7439-92-1	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.000264	0.00200	< 0.00200	U
Magnesium	7439-95-4	mg/L	8/15/2015 2330h	8/16/2015 447h	E200.7	0.0294	1.00	<b>8.40</b>	
Manganese	7439-96-5	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.00153	0.00200	< 0.00200	U
Mercury	7439-97-6	mg/L	8/15/2015 2330h	8/16/2015 750h	E245.1	0.00000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.000206	0.00200	<b>0.00393</b>	
Nickel	7440-02-0	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.000754	0.00200	0.000816	J
Potassium	7440-09-7	mg/L	8/15/2015 2330h	8/16/2015 447h	E200.7	0.247	1.00	<b>3.46</b>	
Selenium	7782-49-2	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.0000634	0.00200	0.00106	J
Silver	7440-22-4	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.0000244	0.00200	0.000276	J
Sodium	7440-23-5	mg/L	8/15/2015 2330h	8/16/2015 447h	E200.7	0.0330	1.00	<b>46.7</b>	
Thallium	7440-28-0	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.0000242	0.00200	0.0000523	J
Vanadium	7440-62-2	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.000438	0.00440	0.00345	J
Zinc	7440-66-6	mg/L	8/15/2015 2330h	8/16/2015 442h	E200.8	0.00476	0.00500	< 0.00500	U

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Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-003  
**Client Sample ID:** San Juan River at Town of Montezuma  
**Collection Date:** 8/15/2015 1131h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

### DISSOLVED METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/15/2015 2330h	8/16/2015 449h	E200.7	0.0237	0.100	0.0681	J
Antimony	7440-36-0	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.0000366	0.00200	0.000642	J
Arsenic	7440-38-2	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.0000920	0.00200	0.00158	JB
Barium	7440-39-3	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.000538	0.00200	<b>0.0736</b>	
Beryllium	7440-41-7	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.0000288	0.00200	0.0000432	J
Cadmium	7440-43-9	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.000193	0.000500	< 0.000500	U
Calcium	7440-70-2	mg/L	8/15/2015 2330h	8/16/2015 449h	E200.7	0.0401	1.00	<b>55.0</b>	
Chromium	7440-47-3	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.00154	0.00200	< 0.00200	U
Cobalt	7440-48-4	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.0000434	0.00400	0.000244	J
Copper	7440-50-8	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.000692	0.00200	<b>0.00438</b>	
Iron	7439-89-6	mg/L	8/15/2015 2330h	8/16/2015 449h	E200.7	0.0767	0.100	< 0.100	U
Lead	7439-92-1	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.000264	0.00200	< 0.00200	U
Magnesium	7439-95-4	mg/L	8/15/2015 2330h	8/16/2015 449h	E200.7	0.0294	1.00	<b>8.57</b>	
Manganese	7439-96-5	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.00153	0.00200	<b>0.00336</b>	
Mercury	7439-97-6	mg/L	8/15/2015 2330h	8/16/2015 752h	E245.1	0.00000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.000206	0.00200	<b>0.00243</b>	
Nickel	7440-02-0	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.000754	0.00200	0.00109	J
Potassium	7440-09-7	mg/L	8/15/2015 2330h	8/16/2015 449h	E200.7	0.247	1.00	<b>3.16</b>	
Selenium	7782-49-2	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.0000634	0.00200	0.000888	J
Silver	7440-22-4	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.0000244	0.00200	0.0000705	J
Sodium	7440-23-5	mg/L	8/15/2015 2330h	8/16/2015 449h	E200.7	0.0330	1.00	<b>35.8</b>	
Thallium	7440-28-0	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.0000242	0.00200	< 0.00200	U
Vanadium	7440-62-2	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.000438	0.00440	0.00354	J
Zinc	7440-66-6	mg/L	8/15/2015 2330h	8/16/2015 445h	E200.8	0.00476	0.00500	< 0.00500	U

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QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-004  
**Client Sample ID:** San Juan R at US160 Xing in CO (4954000)  
**Collection Date:** 8/15/2015 1204h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

### DISSOLVED METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/15/2015 2330h	8/16/2015 459h	E200.7	0.0237	0.100	0.0475	J
Antimony	7440-36-0	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.0000366	0.00200	0.000445	J
Arsenic	7440-38-2	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.0000920	0.00200	0.00136	JB
Barium	7440-39-3	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.000538	0.00200	<b>0.0652</b>	
Beryllium	7440-41-7	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.0000288	0.00200	< 0.00200	U
Cadmium	7440-43-9	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.000193	0.000500	< 0.000500	U
Calcium	7440-70-2	mg/L	8/15/2015 2330h	8/16/2015 459h	E200.7	0.0401	1.00	<b>52.8</b>	
Chromium	7440-47-3	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.00154	0.00200	< 0.00200	U
Cobalt	7440-48-4	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.0000434	0.00400	0.0000520	J
Copper	7440-50-8	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.000692	0.00200	0.00135	J
Iron	7439-89-6	mg/L	8/15/2015 2330h	8/16/2015 459h	E200.7	0.0767	0.100	< 0.100	U
Lead	7439-92-1	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.000264	0.00200	< 0.00200	U
Magnesium	7439-95-4	mg/L	8/15/2015 2330h	8/16/2015 459h	E200.7	0.0294	1.00	<b>7.91</b>	
Manganese	7439-96-5	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.00153	0.00200	< 0.00200	U
Mercury	7439-97-6	mg/L	8/15/2015 2330h	8/16/2015 754h	E245.1	0.00000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.000206	0.00200	<b>0.00225</b>	
Nickel	7440-02-0	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.000754	0.00200	< 0.00200	U
Potassium	7440-09-7	mg/L	8/15/2015 2330h	8/16/2015 459h	E200.7	0.247	1.00	<b>2.61</b>	
Selenium	7782-49-2	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.0000634	0.00200	0.000608	J
Silver	7440-22-4	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.0000244	0.00200	< 0.00200	U
Sodium	7440-23-5	mg/L	8/15/2015 2330h	8/16/2015 459h	E200.7	0.0330	1.00	<b>25.9</b>	
Thallium	7440-28-0	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.0000242	0.00200	< 0.00200	U
Vanadium	7440-62-2	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.000438	0.00440	0.00261	J
Zinc	7440-66-6	mg/L	8/15/2015 2330h	8/16/2015 448h	E200.8	0.00476	0.00500	< 0.00500	U

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Kyle F. Gross  
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Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-005  
**Client Sample ID:** SJR @ Clay Hills  
**Collection Date:** 8/15/2015 1430h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

### DISSOLVED METALS

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Aluminum	7429-90-5	mg/L	8/15/2015 2330h	8/16/2015 501h	E200.7	0.0237	0.100	<b>0.119</b>	
Antimony	7440-36-0	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.0000366	0.00200	0.000343	J
Arsenic	7440-38-2	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.0000920	0.00200	0.00175	JB
Barium	7440-39-3	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.000538	0.00200	<b>0.136</b>	
Beryllium	7440-41-7	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.0000288	0.00200	< 0.00200	U
Cadmium	7440-43-9	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.000193	0.000500	< 0.000500	U
Calcium	7440-70-2	mg/L	8/15/2015 2330h	8/16/2015 501h	E200.7	0.0401	1.00	<b>43.1</b>	
Chromium	7440-47-3	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.00154	0.00200	< 0.00200	U
Cobalt	7440-48-4	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.0000434	0.00400	0.0000773	J
Copper	7440-50-8	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.000692	0.00200	<b>0.00260</b>	
Iron	7439-89-6	mg/L	8/15/2015 2330h	8/16/2015 501h	E200.7	0.0767	0.100	< 0.100	U
Lead	7439-92-1	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.000264	0.00200	< 0.00200	U
Magnesium	7439-95-4	mg/L	8/15/2015 2330h	8/16/2015 501h	E200.7	0.0294	1.00	<b>8.99</b>	
Manganese	7439-96-5	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.00153	0.00200	< 0.00200	U
Mercury	7439-97-6	mg/L	8/15/2015 2330h	8/16/2015 756h	E245.1	0.00000892	0.000150	< 0.000150	U
Molybdenum	7439-98-7	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.000206	0.00200	<b>0.00427</b>	
Nickel	7440-02-0	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.000754	0.00200	0.000947	J
Potassium	7440-09-7	mg/L	8/15/2015 2330h	8/16/2015 501h	E200.7	0.247	1.00	<b>3.62</b>	
Selenium	7782-49-2	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.0000634	0.00200	0.00118	J
Silver	7440-22-4	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.0000244	0.00200	< 0.00200	U
Sodium	7440-23-5	mg/L	8/15/2015 2330h	8/16/2015 509h	E200.7	0.330	10.0	<b>66.3</b>	
Thallium	7440-28-0	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.0000242	0.00200	< 0.00200	U
Vanadium	7440-62-2	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.000438	0.00440	<b>0.00548</b>	
Zinc	7440-66-6	mg/L	8/15/2015 2330h	8/16/2015 451h	E200.8	0.00476	0.00500	< 0.00500	U

*Analysis performed on a portion of the sample filtered at the laboratory upon receipt.*

*B - This analyte was also detected in the method blank below the PQL.*

*J - Estimated value between the MDL and the reporting limit (PQL).*

*U - This flag indicates the compound was analyzed for but not detected above the MDL.*



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Laboratory Director

Jose Rocha  
QA Officer

## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-001  
**Client Sample ID:** San Juan R at Mexican Hat US163 Xing (4953000)  
**Collection Date:** 8/15/2015 943h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	118	
Bicarbonate (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	118	
Carbonate (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		8/16/2015 146h	E300.0	0.0751	1.00	23.5	
Conductivity		µmhos/cm		8/16/2015 527h	SM2510B	0.436	2.00	733	
Hardness (as CaCO <sub>3</sub> )		mg/L		8/16/2015	SM2340B	10.0	10.0	685	
Hardness, Dissolved (as CaCO <sub>3</sub> )		mg/L		8/16/2015	SM2340B	10.0	10.0	171	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		8/15/2015 2233h	E353.2	0.00833	0.0100	0.675	B
pH @ 25° C		pH Units		8/15/2015 2213h	SM4500-H+B	1.00	1.00	8.34	
Phosphate, Total (as P)	7723-14-0	mg/L	8/16/2015 630h	8/16/2015 1006h	SM4500-P-F	0.0212	0.0500	2.06	<sup>1</sup>
Sulfate	14808-79-8	mg/L		8/16/2015 146h	E300.0	0.211	7.50	191	
Total Dissolved Solids		mg/L		8/15/2015 2150h	SM2540C	30.6	50.0	710	
Total Suspended Solids	TSS	mg/L		8/15/2015 2150h	SM2540D	142	150	7,060	

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.

U - This flag indicates the compound was analyzed for but not detected above the MDL.



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Jose Rocha  
QA Officer

## **INORGANIC ANALYTICAL REPORT**

**Client:** Utah Division of Water Quality **Contact:** Lenora Sullivan  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-002  
**Client Sample ID:** San Juan R at Sand Island (4953250)  
**Collection Date:** 8/15/2015 1030h  
**Received Date:** 8/15/2015 2120h

### **Analytical Results**

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	113	
Bicarbonate (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	113	
Carbonate (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		8/16/2015 236h	E300.0	0.0751	1.00	21.2	
Conductivity		µmhos/cm		8/16/2015 527h	SM2510B	0.436	2.00	680	
Hardness (as CaCO <sub>3</sub> )		mg/L		8/16/2015	SM2340B	10.0	10.0	363	
Hardness, Dissolved (as CaCO <sub>3</sub> )		mg/L		8/16/2015	SM2340B	10.0	10.0	174	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		8/15/2015 2234h	E353.2	0.00833	0.0100	0.586	B
pH @ 25° C		pH Units		8/15/2015 2213h	SM4500-H+B	1.00	1.00	8.32	
Phosphate, Total (as P)	7723-14-0	mg/L	8/16/2015 630h	8/16/2015 1008h	SM4500-P-F	0.0212	0.0500	1.01	
Sulfate	14808-79-8	mg/L		8/16/2015 236h	E300.0	0.211	7.50	164	
Total Dissolved Solids		mg/L		8/15/2015 2150h	SM2540C	30.6	50.0	540	
Total Suspended Solids	TSS	mg/L		8/15/2015 2150h	SM2540D	142	150	3,320	

B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.

U - This flag indicates the compound was analyzed for but not detected above the MDL.



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Laboratory Director

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QA Officer

## **INORGANIC ANALYTICAL REPORT**

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-003  
**Client Sample ID:** San Juan River at Town of Montezuma  
**Collection Date:** 8/15/2015 1131h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### **Analytical Results**

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	112	
Bicarbonate (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	112	
Carbonate (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		8/16/2015 253h	E300.0	0.0751	1.00	20.9	
Conductivity		µmhos/cm		8/16/2015 527h	SM2510B	0.436	2.00	622	
Hardness (as CaCO <sub>3</sub> )		mg/L		8/16/2015	SM2340B	10.0	10.0	306	
Hardness, Dissolved (as CaCO <sub>3</sub> )		mg/L		8/16/2015	SM2340B	10.0	10.0	173	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		8/15/2015 2236h	E353.2	0.00833	0.0100	0.357	B
pH @ 25° C		pH Units		8/15/2015 2213h	SM4500-H+B	1.00	1.00	8.36	
Phosphate, Total (as P)	7723-14-0	mg/L	8/16/2015 630h	8/16/2015 1009h	SM4500-P-F	0.0212	0.0500	0.903	
Sulfate	14808-79-8	mg/L		8/16/2015 253h	E300.0	0.211	7.50	139	
Total Dissolved Solids		mg/L		8/15/2015 2150h	SM2540C	30.6	50.0	440	
Total Suspended Solids	TSS	mg/L		8/15/2015 2150h	SM2540D	142	150	1,900	

B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.

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## INORGANIC ANALYTICAL REPORT

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-004  
**Client Sample ID:** San Juan R at US160 Xing in CO (4954000)  
**Collection Date:** 8/15/2015 1204h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### Analytical Results

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	108	
Bicarbonate (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	108	
Carbonate (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		8/16/2015 310h	E300.0	0.0751	1.00	15.6	
Conductivity		µmhos/cm		8/16/2015 527h	SM2510B	0.436	2.00	548	
Hardness (as CaCO <sub>3</sub> )		mg/L		8/16/2015	SM2340B	10.0	10.0	222	
Hardness, Dissolved (as CaCO <sub>3</sub> )		mg/L		8/16/2015	SM2340B	10.0	10.0	164	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		8/15/2015 2237h	E353.2	0.00833	0.0100	0.230	B
pH @ 25° C		pH Units		8/15/2015 2213h	SM4500-H+B	1.00	1.00	8.34	
Phosphate, Total (as P)	7723-14-0	mg/L	8/16/2015 630h	8/16/2015 1010h	SM4500-P-F	0.0212	0.0500	0.521	
Sulfate	14808-79-8	mg/L		8/16/2015 310h	E300.0	0.211	7.50	106	
Total Dissolved Solids		mg/L		8/15/2015 2150h	SM2540C	30.6	50.0	580	
Total Suspended Solids	TSS	mg/L		8/15/2015 2150h	SM2540D	28.3	30.0	784	

B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.

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## **INORGANIC ANALYTICAL REPORT**

**Client:** Utah Division of Water Quality  
**Project:** Gold King Mine - San Juan River Sampling  
**Lab Sample ID:** 1508302-005  
**Client Sample ID:** SJR @ Clay Hills  
**Collection Date:** 8/15/2015 1430h  
**Received Date:** 8/15/2015 2120h

**Contact:** Lenora Sullivan

### **Analytical Results**

Compound	CAS	Units	Date Prepared	Date Analyzed	Method Used	MDL	Reporting Limit	Analytical Result	Qual
Alkalinity (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	135	
Bicarbonate (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	135	
Carbonate (as CaCO <sub>3</sub> )		mg/L		8/16/2015 534h	SM2320B	1.86	10.0	< 10.0	U
Chloride	16887-00-6	mg/L		8/16/2015 327h	E300.0	0.0751	1.00	35.0	
Conductivity		µmhos/cm		8/16/2015 527h	SM2510B	0.436	2.00	744	
Hardness (as CaCO <sub>3</sub> )		mg/L		8/16/2015	SM2340B	10.0	10.0	2,850	
Hardness, Dissolved (as CaCO <sub>3</sub> )		mg/L		8/16/2015	SM2340B	10.0	10.0	145	
Nitrate/Nitrite (as N)	7727-37-9	mg/L		8/15/2015 2241h	E353.2	0.00833	0.0100	0.813	B
pH @ 25° C		pH Units		8/15/2015 2213h	SM4500-H+B	1.00	1.00	8.27	
Phosphate, Total (as P)	7723-14-0	mg/L	8/16/2015 630h	8/16/2015 1011h	SM4500-P-F	0.212	0.500	7.22	
Sulfate	14808-79-8	mg/L		8/16/2015 327h	E300.0	0.211	7.50	159	
Total Dissolved Solids		mg/L		8/15/2015 2150h	SM2540C	30.6	50.0	920	
Total Suspended Solids	TSS	mg/L		8/15/2015 2150h	SM2540D	142	150	18,800	

B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.

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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** LCS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: LCS-38600</b>													
Date Analyzed:		08/16/2015 435h											
Test Code:		200.7-DIS											
Date Prepared:		08/15/2015 233 0h											
Aluminum	0.980	mg/L	E200.7	0.0237	0.100	1.000	0	98.0	85 - 115				
Calcium	9.87	mg/L	E200.7	0.0401	1.00	10.00	0	98.7	85 - 115				
Iron	0.954	mg/L	E200.7	0.0767	0.100	1.000	0	95.4	85 - 115				
Magnesium	10.1	mg/L	E200.7	0.0294	1.00	10.00	0	101	85 - 115				
Potassium	10.1	mg/L	E200.7	0.247	1.00	10.00	0	101	85 - 115				
Sodium	9.73	mg/L	E200.7	0.0330	1.00	10.00	0	97.3	85 - 115				
<b>Lab Sample ID: LCS-38598</b>													
Date Analyzed:		08/16/2015 340h											
Test Code:		200.7-W											
Date Prepared:		08/15/2015 223 3h											
Aluminum	0.979	mg/L	E200.7	0.0237	0.100	1.000	0	97.9	85 - 115				
Calcium	9.71	mg/L	E200.7	0.0401	1.00	10.00	0	97.1	85 - 115				
Iron	0.950	mg/L	E200.7	0.0767	0.100	1.000	0	95.0	85 - 115				
Magnesium	9.97	mg/L	E200.7	0.0294	1.00	10.00	0	99.7	85 - 115				
Potassium	10.0	mg/L	E200.7	0.247	1.00	10.00	0	100	85 - 115				
Sodium	9.73	mg/L	E200.7	0.0330	1.00	10.00	0	97.3	85 - 115				
<b>Lab Sample ID: LCS-38601</b>													
Date Analyzed:		08/16/2015 412h											
Test Code:		200.8-DIS											
Date Prepared:		08/15/2015 233 0h											
Antimony	0.171	mg/L	E200.8	0.0000366	0.00200	0.2000	0	85.5	85 - 115				
Arsenic	0.201	mg/L	E200.8	0.0000920	0.00200	0.2000	0	101	85 - 115				
Barium	0.185	mg/L	E200.8	0.000538	0.00200	0.2000	0	92.7	85 - 115				
Beryllium	0.199	mg/L	E200.8	0.0000288	0.00200	0.2000	0	99.5	85 - 115				
Cadmium	0.191	mg/L	E200.8	0.000193	0.000500	0.2000	0	95.4	85 - 115				
Chromium	0.186	mg/L	E200.8	0.00154	0.00200	0.2000	0	92.9	85 - 115				
Cobalt	0.184	mg/L	E200.8	0.0000434	0.00400	0.2000	0	92.2	85 - 115				
Copper	0.189	mg/L	E200.8	0.000692	0.00200	0.2000	0	94.5	85 - 115				
Lead	0.189	mg/L	E200.8	0.000264	0.00200	0.2000	0	94.4	85 - 115				
Manganese	0.188	mg/L	E200.8	0.00153	0.00200	0.2000	0	94.1	85 - 115				
Molybdenum	0.184	mg/L	E200.8	0.000206	0.00200	0.2000	0	92.0	85 - 115				

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All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. Confidential Business Information: This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



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Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** LCS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: LCS-38601</b>		Date Analyzed:	08/16/2015 412h										
Test Code: 200.8-DIS		Date Prepared:	08/15/2015 233 0h										
Nickel	0.184	mg/L	E200.8	0.000754	0.00200	0.2000	0	92.0	85 - 115				
Selenium	0.202	mg/L	E200.8	0.0000634	0.00200	0.2000	0	101	85 - 115				
Silver	0.180	mg/L	E200.8	0.0000244	0.00200	0.2000	0	89.8	85 - 115				
Thallium	0.186	mg/L	E200.8	0.0000242	0.00200	0.2000	0	93.2	85 - 115				
Vanadium	0.187	mg/L	E200.8	0.000438	0.00440	0.2000	0	93.6	85 - 115				
Zinc	0.990	mg/L	E200.8	0.00476	0.00500	1.000	0	99.0	85 - 115				
<b>Lab Sample ID: LCS-38599</b>		Date Analyzed:	08/16/2015 306h										
Test Code: 200.8-W		Date Prepared:	08/15/2015 223 3h										
Antimony	0.173	mg/L	E200.8	0.0000366	0.00200	0.2000	0	86.5	85 - 115				
Arsenic	0.202	mg/L	E200.8	0.0000920	0.00200	0.2000	0	101	85 - 115				
Barium	0.190	mg/L	E200.8	0.000538	0.00200	0.2000	0	95.2	85 - 115				
Beryllium	0.204	mg/L	E200.8	0.0000288	0.00200	0.2000	0	102	85 - 115				
Cadmium	0.195	mg/L	E200.8	0.000193	0.000500	0.2000	0	97.3	85 - 115				
Chromium	0.188	mg/L	E200.8	0.00154	0.00200	0.2000	0	94.2	85 - 115				
Cobalt	0.188	mg/L	E200.8	0.0000434	0.00400	0.2000	0	94.0	85 - 115				
Copper	0.192	mg/L	E200.8	0.000692	0.00200	0.2000	0	95.8	85 - 115				
Lead	0.193	mg/L	E200.8	0.000264	0.00200	0.2000	0	96.7	85 - 115				
Manganese	0.189	mg/L	E200.8	0.00153	0.00200	0.2000	0	94.3	85 - 115				
Molybdenum	0.188	mg/L	E200.8	0.000206	0.00200	0.2000	0	94.1	85 - 115				
Nickel	0.188	mg/L	E200.8	0.000754	0.00200	0.2000	0	94.0	85 - 115				
Selenium	0.204	mg/L	E200.8	0.0000634	0.00200	0.2000	0	102	85 - 115				
Silver	0.192	mg/L	E200.8	0.0000244	0.00200	0.2000	0	96.0	85 - 115				
Thallium	0.189	mg/L	E200.8	0.0000242	0.00200	0.2000	0	94.7	85 - 115				
Vanadium	0.191	mg/L	E200.8	0.000438	0.00440	0.2000	0	95.6	85 - 115				
Zinc	0.993	mg/L	E200.8	0.00476	0.00500	1.000	0	99.3	85 - 115				

Report Date: 8/16/2015 Page 18 of 34

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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** LCS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> LCS-38602	Date Analyzed:	08/16/2015	650h										
Test Code:	HG-DW-245.1	Date Prepared:	08/15/2015	224	5h								
Mercury	0.00312	mg/L	E245.1	0.00000892	0.000150	0.003330	0	93.5	85 - 115				
<b>Lab Sample ID:</b> LCS-38603	Date Analyzed:	08/16/2015	721h										
Test Code:	HG-DW-DIS-245.1	Date Prepared:	08/15/2015	233	0h								
Mercury	0.00341	mg/L	E245.1	0.00000892	0.000150	0.003330	0	102	85 - 115				



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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** MBLK

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> MB-38600	Date Analyzed:	08/16/2015 432h											
Test Code:	200.7-DIS	Date Prepared:	08/15/2015 233 0h										
Aluminum	< 0.100	mg/L	E200.7	0.0237	0.100								U
Calcium	< 1.00	mg/L	E200.7	0.0401	1.00								U
Iron	< 0.100	mg/L	E200.7	0.0767	0.100								U
Magnesium	< 1.00	mg/L	E200.7	0.0294	1.00								U
Potassium	< 1.00	mg/L	E200.7	0.247	1.00								U
Sodium	< 1.00	mg/L	E200.7	0.0330	1.00								U
<b>Lab Sample ID:</b> MB-38598	Date Analyzed:	08/16/2015 337h											
Test Code:	200.7-W	Date Prepared:	08/15/2015 223 3h										
Aluminum	< 0.100	mg/L	E200.7	0.0237	0.100								U
Calcium	< 1.00	mg/L	E200.7	0.0401	1.00								U
Iron	< 0.100	mg/L	E200.7	0.0767	0.100								U
Magnesium	0.0378	mg/L	E200.7	0.0294	1.00								JB
Potassium	< 1.00	mg/L	E200.7	0.247	1.00								U
Sodium	< 1.00	mg/L	E200.7	0.0330	1.00								U
<b>Lab Sample ID:</b> MB-38601	Date Analyzed:	08/16/2015 409h											
Test Code:	200.8-DIS	Date Prepared:	08/15/2015 233 0h										
Antimony	< 0.00200	mg/L	E200.8	0.0000366	0.00200								U
Arsenic	0.000166	mg/L	E200.8	0.0000920	0.00200								JB
Barium	< 0.00200	mg/L	E200.8	0.000538	0.00200								U
Beryllium	< 0.00200	mg/L	E200.8	0.0000288	0.00200								U
Cadmium	< 0.000500	mg/L	E200.8	0.000193	0.000500								U
Chromium	< 0.00200	mg/L	E200.8	0.00154	0.00200								U
Cobalt	< 0.00400	mg/L	E200.8	0.0000434	0.00400								U
Copper	< 0.00200	mg/L	E200.8	0.000692	0.00200								U
Lead	< 0.00200	mg/L	E200.8	0.000264	0.00200								U
Manganese	< 0.00200	mg/L	E200.8	0.00153	0.00200								U
Molybdenum	< 0.00200	mg/L	E200.8	0.000206	0.00200								U

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** MBLK

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: MB-38601</b>		Date Analyzed:	08/16/2015 409h										
Test Code: 200.8-DIS		Date Prepared:	08/15/2015 233 0h										
Nickel	< 0.00200	mg/L	E200.8	0.000754	0.00200								U
Selenium	< 0.00200	mg/L	E200.8	0.0000634	0.00200								U
Silver	< 0.00200	mg/L	E200.8	0.0000244	0.00200								U
Thallium	< 0.00200	mg/L	E200.8	0.0000242	0.00200								U
Vanadium	< 0.00440	mg/L	E200.8	0.000438	0.00440								U
Zinc	< 0.00500	mg/L	E200.8	0.00476	0.00500								U
<b>Lab Sample ID: MB-38599</b>		Date Analyzed:	08/16/2015 252h										
Test Code: 200.8-W		Date Prepared:	08/15/2015 223 3h										
Antimony	< 0.00200	mg/L	E200.8	0.0000366	0.00200								U
Arsenic	< 0.00200	mg/L	E200.8	0.0000920	0.00200								U
Barium	< 0.00200	mg/L	E200.8	0.000538	0.00200								U
Beryllium	< 0.00200	mg/L	E200.8	0.0000288	0.00200								U
Cadmium	< 0.000500	mg/L	E200.8	0.000193	0.000500								U
Chromium	< 0.00200	mg/L	E200.8	0.00154	0.00200								U
Cobalt	< 0.00400	mg/L	E200.8	0.0000434	0.00400								U
Copper	< 0.00200	mg/L	E200.8	0.000692	0.00200								U
Lead	< 0.00200	mg/L	E200.8	0.000264	0.00200								U
Manganese	< 0.00200	mg/L	E200.8	0.00153	0.00200								U
Molybdenum	< 0.00200	mg/L	E200.8	0.000206	0.00200								U
Nickel	< 0.00200	mg/L	E200.8	0.000754	0.00200								U
Selenium	< 0.00200	mg/L	E200.8	0.0000634	0.00200								U
Silver	< 0.00200	mg/L	E200.8	0.0000244	0.00200								U
Thallium	< 0.00200	mg/L	E200.8	0.0000242	0.00200								U
Vanadium	< 0.00440	mg/L	E200.8	0.000438	0.00440								U
Zinc	< 0.00500	mg/L	E200.8	0.00476	0.00500								U



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Laboratory Director

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QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** MBLK

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> MB-38602	Date Analyzed:	08/16/2015	648h										
Test Code:	HG-DW-245.1	Date Prepared:	08/15/2015	224	5h								
Mercury	0.0000100	mg/L	E245.1	0.00000892	0.000150								J
<b>Lab Sample ID:</b> MB-38603	Date Analyzed:	08/16/2015	719h										
Test Code:	HG-DW-DIS-245.1	Date Prepared:	08/15/2015	233	0h								
Mercury	< 0.000150	mg/L	E245.1	0.00000892	0.000150								U

*B - This analyte was also detected in the method b lank below the PQL.*

*J - Estimated value between the MDL and the reporting limit (PQL).*

*U - This flag indicates the compound was analyzed for but not detected above the MDL.*



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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** MS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> 1508302-001CMS	Date Analyzed:	08/16/2015 443h											
Test Code:	200.7-DIS	Date Prepared:	08/15/2015 233 0h										
Aluminum	1.10	mg/L	E200.7	0.0237	0.100	1.000	0.135	96.2	70 - 130				
Iron	1.02	mg/L	E200.7	0.0767	0.100	1.000	0	102	70 - 130				
Magnesium	19.2	mg/L	E200.7	0.0294	1.00	10.00	9.03	101	70 - 130				
Potassium	13.5	mg/L	E200.7	0.247	1.00	10.00	3.62	98.6	70 - 130				
<b>Lab Sample ID:</b> 1508302-001CMS	Date Analyzed:	08/16/2015 505h											
Test Code:	200.7-DIS	Date Prepared:	08/15/2015 233 0h										
Calcium	66.0	mg/L	E200.7	0.401	10.0	10.00	53.7	123	70 - 130				
Sodium	63.4	mg/L	E200.7	0.330	10.0	10.00	51.9	115	70 - 130				
<b>Lab Sample ID:</b> 1508302-001BMS	Date Analyzed:	08/16/2015 344h											
Test Code:	200.7-W	Date Prepared:	08/15/2015 223 3h										
Aluminum	72.8	mg/L	E200.7	0.237	1.00	1.000	63.7	914	70 - 130				2
Calcium	213	mg/L	E200.7	0.401	10.0	10.00	207	59.3	70 - 130				2
Sodium	68.5	mg/L	E200.7	0.330	10.0	10.00	59.6	88.4	70 - 130				
<b>Lab Sample ID:</b> 1508302-001BMS	Date Analyzed:	08/16/2015 411h											
Test Code:	200.7-W	Date Prepared:	08/15/2015 223 3h										
Iron	50.5	mg/L	E200.7	0.0767	0.100	1.000	45.1	543	70 - 130				2
Magnesium	52.8	mg/L	E200.7	0.0294	1.00	10.00	40.7	120	70 - 130				
Potassium	24.6	mg/L	E200.7	0.247	1.00	10.00	14	106	70 - 130				
<b>Lab Sample ID:</b> 1508302-001CMS	Date Analyzed:	08/16/2015 435h											
Test Code:	200.8-DIS	Date Prepared:	08/15/2015 233 0h										
Antimony	0.180	mg/L	E200.8	0.0000366	0.00200	0.2000	0.00104	89.5	75 - 125				
Arsenic	0.205	mg/L	E200.8	0.0000920	0.00200	0.2000	0.0017	101	75 - 125				
Barium	0.308	mg/L	E200.8	0.000538	0.00200	0.2000	0.117	95.3	75 - 125				
Beryllium	0.201	mg/L	E200.8	0.0000288	0.00200	0.2000	0.000032	100	75 - 125				
Cadmium	0.191	mg/L	E200.8	0.000193	0.000500	0.2000	0	95.6	75 - 125				
Chromium	0.184	mg/L	E200.8	0.00154	0.00200	0.2000	0	91.9	75 - 125				

Report Date: 8/16/2015 Page 23 of 34

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QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** MS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1508302-001CMS</b>		Date Analyzed:	08/16/2015 435h										
Test Code: 200.8-DIS		Date Prepared:	08/15/2015 233 0h										
Cobalt	0.183	mg/L	E200.8	0.0000434	0.00400	0.2000	0.000575	91.2	75 - 125				
Copper	0.197	mg/L	E200.8	0.000692	0.00200	0.2000	0.00856	94.4	75 - 125				
Lead	0.188	mg/L	E200.8	0.000264	0.00200	0.2000	0	94.2	75 - 125				
Manganese	0.195	mg/L	E200.8	0.00153	0.00200	0.2000	0.00742	94.0	75 - 125				
Molybdenum	0.191	mg/L	E200.8	0.000206	0.00200	0.2000	0.00328	94.1	75 - 125				
Nickel	0.183	mg/L	E200.8	0.000754	0.00200	0.2000	0.00166	90.8	75 - 125				
Selenium	0.201	mg/L	E200.8	0.0000634	0.00200	0.2000	0.00119	99.7	75 - 125				
Silver	0.182	mg/L	E200.8	0.0000244	0.00200	0.2000	0.000192	90.8	75 - 125				
Thallium	0.185	mg/L	E200.8	0.0000242	0.00200	0.2000	0.0000557	92.6	75 - 125				
Vanadium	0.192	mg/L	E200.8	0.000438	0.00440	0.2000	0.00565	93.3	75 - 125				
Zinc	0.998	mg/L	E200.8	0.00476	0.00500	1.000	0.00618	99.2	75 - 125				
<b>Lab Sample ID: 1508302-001BMS</b>		Date Analyzed:	08/16/2015 325h										
Test Code: 200.8-W		Date Prepared:	08/15/2015 223 3h										
Antimony	0.0291	mg/L	E200.8	0.0000366	0.00200	0.2000	0.00116	14.0	75 - 125				1
Arsenic	0.176	mg/L	E200.8	0.0000920	0.00200	0.2000	0.0168	79.7	75 - 125				
Barium	1.86	mg/L	E200.8	0.000538	0.00200	0.2000	1.62	119	75 - 125				
Beryllium	0.194	mg/L	E200.8	0.0000288	0.00200	0.2000	0.00729	93.1	75 - 125				
Cadmium	0.190	mg/L	E200.8	0.000193	0.000500	0.2000	0.00146	94.3	75 - 125				
Chromium	0.203	mg/L	E200.8	0.00154	0.00200	0.2000	0.0298	86.5	75 - 125				
Cobalt	0.211	mg/L	E200.8	0.0000434	0.00400	0.2000	0.0355	87.9	75 - 125				
Copper	0.248	mg/L	E200.8	0.000692	0.00200	0.2000	0.079	84.6	75 - 125				
Lead	0.274	mg/L	E200.8	0.000264	0.00200	0.2000	0.0867	93.5	75 - 125				
Molybdenum	0.0863	mg/L	E200.8	0.000206	0.00200	0.2000	0.000957	42.7	75 - 125				1
Nickel	0.229	mg/L	E200.8	0.000754	0.00200	0.2000	0.0478	90.4	75 - 125				
Selenium	0.153	mg/L	E200.8	0.0000634	0.00200	0.2000	0.00157	75.6	75 - 125				
Silver	0.185	mg/L	E200.8	0.0000244	0.00200	0.2000	0.000631	92.3	75 - 125				
Thallium	0.167	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000862	82.9	75 - 125				
Vanadium	0.249	mg/L	E200.8	0.000438	0.00440	0.2000	0.0755	86.9	75 - 125				

Report Date: 8/16/2015 Page 24 of 34

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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** MS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> 1508302-001BMS	Date Analyzed:	08/16/2015 325h											
Test Code:	200.8-W	Date Prepared:	08/15/2015 223 3h										
Zinc	1.15	mg/L	E200.8	0.00476	0.00500	1.000	0.22	92.9	75 - 125				
<b>Lab Sample ID:</b> 1508302-001BMS	Date Analyzed:	08/16/2015 359h											
Test Code:	200.8-W	Date Prepared:	08/15/2015 223 3h										
Manganese	2.51	mg/L	E200.8	0.00764	0.0100	0.2000	2.33	90.6	75 - 125				
<b>Lab Sample ID:</b> 1508302-004BMS	Date Analyzed:	08/16/2015 700h											
Test Code:	HG-DW-245.1	Date Prepared:	08/15/2015 224 5h										
Mercury	0.00321	mg/L	E245.1	0.00000892	0.000150	0.003330	0.00003	95.5	80 - 120				
<b>Lab Sample ID:</b> 1508302-001CMS	Date Analyzed:	08/16/2015 742h											
Test Code:	HG-DW-DIS-245.1	Date Prepared:	08/15/2015 233 0h										
Mercury	0.00330	mg/L	E245.1	0.00000892	0.000150	0.003330	0	99.2	85 - 115				

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

<sup>2</sup> - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.



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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** MSD

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> 1508302-001CMSD	Date Analyzed:	08/16/2015 445h											
Test Code:	200.7-DIS	Date Prepared:	08/15/2015 233 0h										
Aluminum	1.07	mg/L	E200.7	0.0237	0.100	1.000	0.135	93.1	70 - 130	1.1	2.79	20	
Iron	0.976	mg/L	E200.7	0.0767	0.100	1.000	0	97.6	70 - 130	1.02	4.33	20	
Magnesium	18.8	mg/L	E200.7	0.0294	1.00	10.00	9.03	98.0	70 - 130	19.2	1.77	20	
Potassium	13.2	mg/L	E200.7	0.247	1.00	10.00	3.62	95.7	70 - 130	13.5	2.18	20	
<b>Lab Sample ID:</b> 1508302-001CMSD	Date Analyzed:	08/16/2015 507h											
Test Code:	200.7-DIS	Date Prepared:	08/15/2015 233 0h										
Calcium	64.8	mg/L	E200.7	0.401	10.0	10.00	53.7	110	70 - 130	66	1.93	20	
Sodium	62.5	mg/L	E200.7	0.330	10.0	10.00	51.9	106	70 - 130	63.4	1.37	20	
<b>Lab Sample ID:</b> 1508302-001BMSD	Date Analyzed:	08/16/2015 346h											
Test Code:	200.7-W	Date Prepared:	08/15/2015 223 3h										
Aluminum	73.1	mg/L	E200.7	0.237	1.00	1.000	63.7	944	70 - 130	72.8	0.414	20	2
Calcium	219	mg/L	E200.7	0.401	10.0	10.00	207	112	70 - 130	213	2.45	20	
Sodium	69.8	mg/L	E200.7	0.330	10.0	10.00	59.6	102	70 - 130	68.5	1.99	20	
<b>Lab Sample ID:</b> 1508302-001BMSD	Date Analyzed:	08/16/2015 413h											
Test Code:	200.7-W	Date Prepared:	08/15/2015 223 3h										
Iron	48.9	mg/L	E200.7	0.0767	0.100	1.000	45.1	385	70 - 130	50.5	3.18	20	2
Magnesium	52.8	mg/L	E200.7	0.0294	1.00	10.00	40.7	121	70 - 130	52.8	0.0255	20	
Potassium	24.2	mg/L	E200.7	0.247	1.00	10.00	14	102	70 - 130	24.6	1.83	20	
<b>Lab Sample ID:</b> 1508302-001CMSD	Date Analyzed:	08/16/2015 438h											
Test Code:	200.8-DIS	Date Prepared:	08/15/2015 233 0h										
Antimony	0.174	mg/L	E200.8	0.0000366	0.00200	0.2000	0.00104	86.5	75 - 125	0.18	3.49	20	
Arsenic	0.196	mg/L	E200.8	0.0000920	0.00200	0.2000	0.0017	97.0	75 - 125	0.205	4.41	20	
Barium	0.298	mg/L	E200.8	0.000538	0.00200	0.2000	0.117	90.4	75 - 125	0.308	3.26	20	
Beryllium	0.190	mg/L	E200.8	0.0000288	0.00200	0.2000	0.000032	95.0	75 - 125	0.201	5.33	20	
Cadmium	0.183	mg/L	E200.8	0.000193	0.000500	0.2000	0	91.4	75 - 125	0.191	4.52	20	
Chromium	0.178	mg/L	E200.8	0.00154	0.00200	0.2000	0	88.9	75 - 125	0.184	3.22	20	

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Laboratory Director

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QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** MSD

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> 1508302-001CMSD	Date Analyzed:	08/16/2015 438h											
Test Code:	200.8-DIS	Date Prepared:	08/15/2015 233 0h										
Cobalt	0.178	mg/L	E200.8	0.0000434	0.00400	0.2000	0.000575	88.9	75 - 125	0.183	2.55	20	
Copper	0.191	mg/L	E200.8	0.000692	0.00200	0.2000	0.00856	91.1	75 - 125	0.197	3.41	20	
Lead	0.181	mg/L	E200.8	0.000264	0.00200	0.2000	0	90.3	75 - 125	0.188	4.16	20	
Manganese	0.188	mg/L	E200.8	0.00153	0.00200	0.2000	0.00742	90.5	75 - 125	0.195	3.71	20	
Molybdenum	0.185	mg/L	E200.8	0.000206	0.00200	0.2000	0.00328	90.8	75 - 125	0.191	3.48	20	
Nickel	0.177	mg/L	E200.8	0.000754	0.00200	0.2000	0.00166	87.9	75 - 125	0.183	3.25	20	
Selenium	0.191	mg/L	E200.8	0.0000634	0.00200	0.2000	0.00119	94.9	75 - 125	0.201	4.89	20	
Silver	0.177	mg/L	E200.8	0.0000244	0.00200	0.2000	0.000192	88.5	75 - 125	0.182	2.56	20	
Thallium	0.178	mg/L	E200.8	0.0000242	0.00200	0.2000	0.0000557	89.0	75 - 125	0.185	4.02	20	
Vanadium	0.188	mg/L	E200.8	0.000438	0.00440	0.2000	0.00565	91.0	75 - 125	0.192	2.41	20	
Zinc	0.951	mg/L	E200.8	0.00476	0.00500	1.000	0.00618	94.5	75 - 125	0.998	4.88	20	
<b>Lab Sample ID:</b> 1508302-001BMSD	Date Analyzed:	08/16/2015 329h											
Test Code:	200.8-W	Date Prepared:	08/15/2015 223 3h										
Antimony	0.0301	mg/L	E200.8	0.0000366	0.00200	0.2000	0.00116	14.5	75 - 125	0.0291	3.46	20	1
Arsenic	0.181	mg/L	E200.8	0.0000920	0.00200	0.2000	0.0168	82.3	75 - 125	0.176	2.87	20	
Barium	1.91	mg/L	E200.8	0.000538	0.00200	0.2000	1.62	148	75 - 125	1.86	3.05	20	2
Beryllium	0.198	mg/L	E200.8	0.0000288	0.00200	0.2000	0.00729	95.3	75 - 125	0.194	2.28	20	
Cadmium	0.194	mg/L	E200.8	0.000193	0.000500	0.2000	0.00146	96.3	75 - 125	0.19	2.01	20	
Chromium	0.207	mg/L	E200.8	0.00154	0.00200	0.2000	0.0298	88.8	75 - 125	0.203	2.25	20	
Cobalt	0.218	mg/L	E200.8	0.0000434	0.00400	0.2000	0.0355	91.2	75 - 125	0.211	3.09	20	
Copper	0.255	mg/L	E200.8	0.000692	0.00200	0.2000	0.079	88.0	75 - 125	0.248	2.73	20	
Lead	0.281	mg/L	E200.8	0.000264	0.00200	0.2000	0.0867	97.0	75 - 125	0.274	2.57	20	
Molybdenum	0.0906	mg/L	E200.8	0.000206	0.00200	0.2000	0.000957	44.8	75 - 125	0.0863	4.83	20	1
Nickel	0.233	mg/L	E200.8	0.000754	0.00200	0.2000	0.0478	92.8	75 - 125	0.229	2.06	20	
Selenium	0.155	mg/L	E200.8	0.0000634	0.00200	0.2000	0.00157	76.7	75 - 125	0.153	1.43	20	
Silver	0.188	mg/L	E200.8	0.0000244	0.00200	0.2000	0.000631	93.9	75 - 125	0.185	1.72	20	
Thallium	0.170	mg/L	E200.8	0.0000242	0.00200	0.2000	0.000862	84.6	75 - 125	0.167	2.04	20	
Vanadium	0.255	mg/L	E200.8	0.000438	0.00440	0.2000	0.0755	89.6	75 - 125	0.249	2.20	20	

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QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** ME

**QC Type:** MSD

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> 1508302-001BMSD	Date Analyzed:	08/16/2015 329h											
Test Code:	200.8-W	Date Prepared:	08/15/2015 223 3h										
Zinc	1.18	mg/L	E200.8	0.00476	0.00500	1.000	0.22	96.2	75 - 125	1.15	2.85	20	
<b>Lab Sample ID:</b> 1508302-001BMSD	Date Analyzed:	08/16/2015 402h											
Test Code:	200.8-W	Date Prepared:	08/15/2015 223 3h										
Manganese	2.51	mg/L	E200.8	0.00764	0.0100	0.2000	2.33	89.4	75 - 125	2.51	0.0942	20	
<b>Lab Sample ID:</b> 1508302-004BMSD	Date Analyzed:	08/16/2015 702h											
Test Code:	HG-DW-245.1	Date Prepared:	08/15/2015 224 5h										
Mercury	0.00342	mg/L	E245.1	0.00000892	0.000150	0.003330	0.00003	102	80 - 120	0.00321	6.38	20	
<b>Lab Sample ID:</b> 1508302-001CMSD	Date Analyzed:	08/16/2015 744h											
Test Code:	HG-DW-DIS-245.1	Date Prepared:	08/15/2015 233 0h										
Mercury	0.00332	mg/L	E245.1	0.00000892	0.000150	0.003330	0	99.8	85 - 115	0.00331	0.603	20	

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

<sup>2</sup> - Analyte concentration is too high for accurate matrix spike recovery and/or RPD.

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QA Officer

## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** WC

**QC Type:** DUP

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> 1508302-001ADUP <b>Test Code:</b> COND-W-2510B	Date Analyzed:	08/16/2015	527h										
Conductivity	736	µmhos/cm	SM2510B	0.436	2.00					733	0.408	5	
<b>Lab Sample ID:</b> 1508302-001ADUP <b>Test Code:</b> PH-4500H+B	Date Analyzed:	08/15/2015	2213h										
pH @ 25° C	8.33	pH Units	SM4500-H+B	1.00	1.00					8.34	0.120	5	
<b>Lab Sample ID:</b> 1508302-002ADUP <b>Test Code:</b> TDS-W-2540C	Date Analyzed:	08/15/2015	2150h										
Total Dissolved Solids	540	mg/L	SM2540C	30.6	50.0					540	0	5	
<b>Lab Sample ID:</b> 1508302-002ADUP <b>Test Code:</b> TSS-W-2540D	Date Analyzed:	08/15/2015	2150h										
Total Suspended Solids	3,220	mg/L	SM2540D	142	150					3320	3.06	5	

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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** WC

**QC Type:** LCS

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> LCS-R81724	Date Analyzed:	08/16/2015	129h										
Test Code:	300.0-W												
Chloride	5.23	mg/L	E300.0	0.00751	0.100	5.000	0	105	90 - 110				
Sulfate	5.13	mg/L	E300.0	0.0211	0.750	5.000	0	103	90 - 110				
<b>Lab Sample ID:</b> LCS-R81716	Date Analyzed:	08/16/2015	534h										
Test Code:	ALK-W-2320B												
Alkalinity (as CaCO <sub>3</sub> )	50,700	mg/L	SM2320B	1.86	10.0	50,000	0	101	90 - 110				
<b>Lab Sample ID:</b> LCS-R81715	Date Analyzed:	08/16/2015	527h										
Test Code:	COND-W-2510B												
Conductivity	996	µmhos/cm	SM2510B	0.436	2.00	1,000	0	99.6	98 - 102				
<b>Lab Sample ID:</b> LCS-R81725	Date Analyzed:	08/15/2015	2232h										
Test Code:	NO2/NO3-W-353.2												
Nitrate/Nitrite (as N)	1.02	mg/L	E353.2	0.00833	0.0100	1.000	0	102	90 - 110				
<b>Lab Sample ID:</b> LCS-R81711	Date Analyzed:	08/15/2015	2213h										
Test Code:	PH-4500H+B												
pH @ 25° C	9.03	pH Units	SM4500-H+B	1.00	1.00	9.000	0	100	98 - 102				
<b>Lab Sample ID:</b> LCS-38604	Date Analyzed:	08/16/2015	1006h										
Test Code:	PO4-W-4500PF	Date Prepared:	08/16/2015 630h										
Phosphate, Total (as P)	1.02	mg/L	SM4500-P-F	0.0212	0.0500	1.000	0	102	90 - 110				
<b>Lab Sample ID:</b> LCS-R81728	Date Analyzed:	08/15/2015	2150h										
Test Code:	TDS-W-2540C												
Total Dissolved Solids	204	mg/L	SM2540C	6.13	10.0	205.0	0	99.5	80 - 120				
<b>Lab Sample ID:</b> LCS-R81729	Date Analyzed:	08/15/2015	2150h										
Test Code:	TSS-W-2540D												
Total Suspended Solids	92.0	mg/L	SM2540D	2.83	3.00	100.0	0	92.0	80 - 120				

Report Date: 8/16/2015 Page 30 of 34

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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** WC

**QC Type:** MBLK

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID:</b> MB-R81724	Date Analyzed:	08/16/2015 112h											
Test Code:	300.0-W												
Chloride	< 0.100	mg/L	E300.0	0.00751	0.100								U
Sulfate	< 0.750	mg/L	E300.0	0.0211	0.750								U
<b>Lab Sample ID:</b> MB-R81716	Date Analyzed:	08/16/2015 534h											
Test Code:	ALK-W-2320B												
Alkalinity (as CaCO <sub>3</sub> )	< 10.0	mg/L	SM2320B	1.86	10.0								U
Bicarbonate (as CaCO <sub>3</sub> )	< 10.0	mg/L	SM2320B	1.86	10.0								U
Carbonate (as CaCO <sub>3</sub> )	< 10.0	mg/L	SM2320B	1.86	10.0								U
<b>Lab Sample ID:</b> MB-R81715	Date Analyzed:	08/16/2015 527h											
Test Code:	COND-W-2510B												
Conductivity	< 2.00	µmhos/cm	SM2510B	0.436	2.00								U
<b>Lab Sample ID:</b> MB-R81725	Date Analyzed:	08/15/2015 2230h											
Test Code:	NO2/NO3-W-353.2												
Nitrate/Nitrite (as N)	0.00854	mg/L	E353.2	0.00833	0.0100								JB
<b>Lab Sample ID:</b> MB-38604	Date Analyzed:	08/16/2015 1005h											
Test Code:	PO4-W-4500PF	Date Prepared:	08/16/2015 630h										
Phosphate, Total (as P)	< 0.0500	mg/L	SM4500-P-F	0.0212	0.0500								U
<b>Lab Sample ID:</b> MB-R81728	Date Analyzed:	08/15/2015 2150h											
Test Code:	TDS-W-2540C												
Total Dissolved Solids	< 10.0	mg/L	SM2540C	6.13	10.0								U
<b>Lab Sample ID:</b> MB-R81729	Date Analyzed:	08/15/2015 2150h											
Test Code:	TSS-W-2540D												
Total Suspended Solids	< 3.00	mg/L	SM2540D	2.83	3.00								U

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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** WC

**QC Type:** MBLK

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
---------	--------	-------	--------	-----	-----------------	---------------	-------------------	------	--------	--------------	-------	-----------	------

*B - The method blank was acceptable, as the method blank result is less than 10% of the lowest reported sample concentration.*

*J - Estimated value between the MDL and the reporting limit (PQL).*

*U - This flag indicates the compound was analyzed for but not detected above the MDL.*





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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** WC

**QC Type:** MS

Analyte		Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
Lab Sample ID:	1508302-001AMS	Date Analyzed:	08/16/2015 203h											
Test Code:	300.0-W													
Chloride		76.6	mg/L	E300.0	0.0751	1.00	50.00	23.5	106	90 - 110				
Sulfate		242	mg/L	E300.0	0.211	7.50	50.00	191	101	90 - 110				
Lab Sample ID:	1508302-001AMS	Date Analyzed:	08/16/2015 534h											
Test Code:	ALK-W-2320B													
Alkalinity (as CaCO3)		220	mg/L	SM2320B	1.86	10.0	100.0	118	101	80 - 120				
Lab Sample ID:	1508302-004AMS	Date Analyzed:	08/15/2015 2239h											
Test Code:	NO2/NO3-W-353.2													
Nitrate/Nitrite (as N)		4.99	mg/L	E353.2	0.0417	0.0500	5.000	0.23	95.2	90 - 110				
Lab Sample ID:	1508302-001DMS	Date Analyzed:	08/16/2015 1007h											
Test Code:	PO4-W-4500PF	Date Prepared:	08/16/2015 630h											
Phosphate, Total (as P)		3.44	mg/L	SM4500-P-F	0.0212	0.0500	1.000	2.06	139	90 - 110	1			

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.



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## QC SUMMARY REPORT

**Client:** Utah Division of Water Quality

**Lab Set ID:** 1508302

**Project:** Gold King Mine - San Juan River Sampling

**Contact:** Lenora Sullivan

**Dept:** WC

**QC Type:** MSD

Analyte	Result	Units	Method	MDL	Reporting Limit	Amount Spiked	Spike Ref. Amount	%REC	Limits	RPD Ref. Amt	% RPD	RPD Limit	Qual
<b>Lab Sample ID: 1508302-001AMSD</b> Date Analyzed: 08/16/2015 220h													
Test Code: 300.0-W													
Chloride	75.6	mg/L	E300.0	0.0751	1.00	50.00	23.5	104	90 - 110	76.6	1.25	20	
Sulfate	241	mg/L	E300.0	0.211	7.50	50.00	191	98.6	90 - 110	242	0.493	20	
<b>Lab Sample ID: 1508302-001AMSD</b> Date Analyzed: 08/16/2015 534h													
Test Code: ALK-W-2320B													
Alkalinity (as CaCO <sub>3</sub> )	221	mg/L	SM2320B	1.86	10.0	100.0	118	103	80 - 120	220	0.771	10	
<b>Lab Sample ID: 1508302-004AMSD</b> Date Analyzed: 08/15/2015 2240h													
Test Code: NO2/NO3-W-353.2													
Nitrate/Nitrite (as N)	5.20	mg/L	E353.2	0.0417	0.0500	5.000	0.23	99.5	90 - 110	4.99	4.22	10	
<b>Lab Sample ID: 1508302-001DMSD</b> Date Analyzed: 08/16/2015 1008h													
Test Code: PO4-W-4500PF      Date Prepared: 08/16/2015 630h													
Phosphate, Total (as P)	3.46	mg/L	SM4500-P-F	0.0212	0.0500	1.000	2.06	140	90 - 110	3.44	0.493	10	<sup>1</sup>

<sup>1</sup> - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.

## WORK ORDER Summary

Work Order: **1508302** Page 1 of 5

Client: Utah Division of Water Quality

Due Date: 8/17/2015

Client ID: UTD200

Contact: Lenora Sullivan

Project: Gold King Mine - San Juan River Sampling

QC Level: II+ MDL

WO Type: Standard

Comments: Same Day Rush. QC2+. Dissolved metals need to be lab filtered. Evaluated down to the MDL. Use sparingly, do not preserve entire sample. Include EDD. CC: Jim Harris and Trisha Johnson;

Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage	
1508302-001A	San Juan R at Mexican Hat US163 Xing (4953000)	8/15/2015 0943h	8/15/2015 2120h	300.0-W	Aqueous	<input checked="" type="checkbox"/>	df - wc	1
				2 SEL Analytes: CL SO4				
				ALK-W-2320B		<input checked="" type="checkbox"/>	df - wc	
				3 SEL Analytes: ALK ALKB ALKC				
				COND-W-2510B		<input type="checkbox"/>	df - wc	
				NO2/NO3-W-353.2		<input type="checkbox"/>	df - wc	
				PH-4500H+B		<input type="checkbox"/>	df - wc	
				TDS-W-2540C		<input type="checkbox"/>	df - wc	
				TSS-W-2540D		<input type="checkbox"/>	df - wc	
1508302-001B				200.7-W		<input checked="" type="checkbox"/>	df - total metals	
				6 SEL Analytes: AL CA FE MG K NA				
				200.7-W-PR		<input type="checkbox"/>	df - total metals	
				200.8-W		<input checked="" type="checkbox"/>	df - total metals	
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN				
				200.8-W-PR		<input type="checkbox"/>	df - total metals	
				HARD-2340B		<input type="checkbox"/>	df - total metals	
				HG-DW-245.1		<input type="checkbox"/>	df - total metals	
				HG-DW-PR		<input type="checkbox"/>	df - total metals	
1508302-001C				200.7-DIS		<input checked="" type="checkbox"/>	df - dis metals	2
				6 SEL Analytes: AL CA FE MG K NA				
				200.7-DIS-PR		<input type="checkbox"/>	df - dis metals	
				200.8-DIS		<input checked="" type="checkbox"/>	df - dis metals	
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN				
				200.8-DIS-PR		<input type="checkbox"/>	df - dis metals	
				FILTER-PR		<input type="checkbox"/>	df - dis metals	
				HARD-2340B		<input checked="" type="checkbox"/>	df - dis metals	
				1 SEL Analytes: HARD				
				HG-DW-DIS-245.1		<input type="checkbox"/>	df - dis metals	
				HG-DW-DIS-PR		<input type="checkbox"/>	df - dis metals	

# WORK ORDER Summary

Work Order: **1508302**

Page 2 of 5

Client: Utah Division of Water Quality

Due Date: 8/17/2015

Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage	
1508302-001D	San Juan R at Mexican Hat US163 Xing (4953000)	8/15/2015 0943h	8/15/2015 2120h	PO4-W-4500PF	Aqueous	<input type="checkbox"/>	df -po4, no2/no3	1
				PO4-W-PR		<input type="checkbox"/>	df -po4, no2/no3	
1508302-002A	San Juan R at Sand Island (4953250)	8/15/2015 1030h	8/15/2015 2120h	300.0-W	Aqueous	<input checked="" type="checkbox"/>	df - wc	1
				2 SEL Analytes: CL SO4				
				ALK-W-2320B		<input checked="" type="checkbox"/>	df - wc	
				3 SEL Analytes: ALK ALKB ALKC				
				COND-W-2510B		<input type="checkbox"/>	df - wc	
				NO2/NO3-W-353.2		<input type="checkbox"/>	df - wc	
				PH-4500H+B		<input type="checkbox"/>	df - wc	
				TDS-W-2540C		<input type="checkbox"/>	df - wc	
				TSS-W-2540D		<input type="checkbox"/>	df - wc	
1508302-002B				200.7-W		<input checked="" type="checkbox"/>	df - total metals	
				6 SEL Analytes: AL CA FE MG K NA				
				200.7-W-PR		<input type="checkbox"/>	df - total metals	
				200.8-W		<input checked="" type="checkbox"/>	df - total metals	
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN				
				200.8-W-PR		<input type="checkbox"/>	df - total metals	
				HARD-2340B		<input type="checkbox"/>	df - total metals	
				HG-DW-245.1		<input type="checkbox"/>	df - total metals	
				HG-DW-PR		<input type="checkbox"/>	df - total metals	
1508302-002C				200.7-DIS		<input checked="" type="checkbox"/>	df - dis metals	2
				6 SEL Analytes: AL CA FE MG K NA				
				200.7-DIS-PR		<input type="checkbox"/>	df - dis metals	
				200.8-DIS		<input checked="" type="checkbox"/>	df - dis metals	
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN				
				200.8-DIS-PR		<input type="checkbox"/>	df - dis metals	
				FILTER-PR		<input type="checkbox"/>	df - dis metals	
				HARD-2340B		<input checked="" type="checkbox"/>	df - dis metals	
				1 SEL Analytes: HARD				
				HG-DW-DIS-245.1		<input type="checkbox"/>	df - dis metals	
				HG-DW-DIS-PR		<input type="checkbox"/>	df - dis metals	
1508302-002D				PO4-W-4500PF		<input type="checkbox"/>	df -po4, no2/no3	1
				PO4-W-PR		<input type="checkbox"/>	df -po4, no2/no3	
1508302-003A	San Juan River at Town of Montezuma	8/15/2015 1131h	8/15/2015 2120h	300.0-W	Aqueous	<input checked="" type="checkbox"/>	df - wc	1
				2 SEL Analytes: CL SO4				

Printed: 8/15/2015

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# WORK ORDER Summary

Work Order: **1508302**

Page 3 of 5

Client: Utah Division of Water Quality

Due Date: 8/17/2015

Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage	
1508302-003A	San Juan River at Town of Montezuma	8/15/2015 1131h	8/15/2015 2120h	ALK-W-2320B	Aqueous	<input checked="" type="checkbox"/>	df - wc	1
				3 SEL Analytes: ALK ALKB ALKC				
				COND-W-2510B		<input type="checkbox"/>	df - wc	
				NO2/NO3-W-353.2		<input type="checkbox"/>	df - wc	
				PH-4500H+B		<input type="checkbox"/>	df - wc	
				TDS-W-2540C		<input type="checkbox"/>	df - wc	
				TSS-W-2540D		<input type="checkbox"/>	df - wc	
1508302-003B				200.7-W		<input checked="" type="checkbox"/>	df - total metals	
				6 SEL Analytes: AL CA FE MG K NA				
				200.7-W-PR		<input type="checkbox"/>	df - total metals	
				200.8-W		<input checked="" type="checkbox"/>	df - total metals	
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN				
				200.8-W-PR		<input type="checkbox"/>	df - total metals	
				HARD-2340B		<input type="checkbox"/>	df - total metals	
				HG-DW-245.1		<input type="checkbox"/>	df - total metals	
				HG-DW-PR		<input type="checkbox"/>	df - total metals	
1508302-003C				200.7-DIS		<input checked="" type="checkbox"/>	df - dis metals	2
				6 SEL Analytes: AL CA FE MG K NA				
				200.7-DIS-PR		<input type="checkbox"/>	df - dis metals	
				200.8-DIS		<input checked="" type="checkbox"/>	df - dis metals	
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN				
				200.8-DIS-PR		<input type="checkbox"/>	df - dis metals	
				FILTER-PR		<input type="checkbox"/>	df - dis metals	
				HARD-2340B		<input checked="" type="checkbox"/>	df - dis metals	
				1 SEL Analytes: HARD				
				HG-DW-DIS-245.1		<input type="checkbox"/>	df - dis metals	
				HG-DW-DIS-PR		<input type="checkbox"/>	df - dis metals	
1508302-003D				PO4-W-4500PF		<input type="checkbox"/>	df -po4, no2/no3	1
				PO4-W-PR		<input type="checkbox"/>	df -po4, no2/no3	
1508302-004A	San Juan R at US160 Xing in CO (4954000)	8/15/2015 1204h	8/15/2015 2120h	300.0-W	Aqueous	<input checked="" type="checkbox"/>	df - wc	1
				2 SEL Analytes: CL SO4				
				ALK-W-2320B		<input checked="" type="checkbox"/>	df - wc	
				3 SEL Analytes: ALK ALKB ALKC				
				COND-W-2510B		<input type="checkbox"/>	df - wc	
				NO2/NO3-W-353.2		<input type="checkbox"/>	df - wc	
				PH-4500H+B		<input type="checkbox"/>	df - wc	
				TDS-W-2540C		<input type="checkbox"/>	df - wc	

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# WORK ORDER Summary

Work Order: **1508302**

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Client: Utah Division of Water Quality

Due Date: 8/17/2015

Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage	
1508302-004A	San Juan R at US160 Xing in CO (4954000)	8/15/2015 1204h	8/15/2015 2120h	TSS-W-2540D	Aqueous	<input type="checkbox"/>	df - wc	1
1508302-004B				200.7-W		<input checked="" type="checkbox"/>	df - total metals	
				6 SEL Analytes: AL CA FE MG K NA				
				200.7-W-PR		<input type="checkbox"/>	df - total metals	
				200.8-W		<input checked="" type="checkbox"/>	df - total metals	
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE				
				AG TL V ZN				
				200.8-W-PR		<input type="checkbox"/>	df - total metals	
				HARD-2340B		<input type="checkbox"/>	df - total metals	
				HG-DW-245.1		<input type="checkbox"/>	df - total metals	
				HG-DW-PR		<input type="checkbox"/>	df - total metals	
1508302-004C				200.7-DIS		<input checked="" type="checkbox"/>	df - dis metals	2
				6 SEL Analytes: AL CA FE MG K NA				
				200.7-DIS-PR		<input type="checkbox"/>	df - dis metals	
				200.8-DIS		<input checked="" type="checkbox"/>	df - dis metals	
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE				
				AG TL V ZN				
				200.8-DIS-PR		<input type="checkbox"/>	df - dis metals	
				FILTER-PR		<input type="checkbox"/>	df - dis metals	
				HARD-2340B		<input checked="" type="checkbox"/>	df - dis metals	
				1 SEL Analytes: HARD				
				HG-DW-DIS-245.1		<input type="checkbox"/>	df - dis metals	
				HG-DW-DIS-PR		<input type="checkbox"/>	df - dis metals	
1508302-004D				PO4-W-4500PF		<input type="checkbox"/>	df -po4, no2/no3	1
				PO4-W-PR		<input type="checkbox"/>	df -po4, no2/no3	
1508302-005A	SJR @ Clay Hills	8/15/2015 1430h	8/15/2015 2120h	300.0-W	Aqueous	<input checked="" type="checkbox"/>	df - wc	1
				2 SEL Analytes: CL SO4				
				ALK-W-2320B		<input checked="" type="checkbox"/>	df - wc	
				3 SEL Analytes: ALK ALKB ALKC				
				COND-W-2510B		<input type="checkbox"/>	df - wc	
				NO2/NO3-W-353.2		<input type="checkbox"/>	df - wc	
				PH-4500H+B		<input type="checkbox"/>	df - wc	
				TDS-W-2540C		<input type="checkbox"/>	df - wc	
				TSS-W-2540D		<input type="checkbox"/>	df - wc	
1508302-005B				200.7-W		<input checked="" type="checkbox"/>	df - total metals	
				6 SEL Analytes: AL CA FE MG K NA				
				200.7-W-PR		<input type="checkbox"/>	df - total metals	

# WORK ORDER Summary

Work Order: **1508302**

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**Client:** Utah Division of Water Quality

**Due Date:** 8/17/2015

Sample ID	Client Sample ID	Collected Date	Received Date	Test Code	Matrix	Sel	Storage	
1508302-005B	SJR @ Clay Hills	8/15/2015 1430h	8/15/2015 2120h	200.8-W	Aqueous	<input checked="" type="checkbox"/>	df - total metals	1
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN				
				200.8-W-PR		<input type="checkbox"/>	df - total metals	
				HARD-2340B		<input type="checkbox"/>	df - total metals	
				HG-DW-245.1		<input type="checkbox"/>	df - total metals	
1508302-005C				HG-DW-PR		<input type="checkbox"/>	df - total metals	
				200.7-DIS		<input checked="" type="checkbox"/>	df - dis metals	2
				6 SEL Analytes: AL CA FE MG K NA				
				200.7-DIS-PR		<input type="checkbox"/>	df - dis metals	
				200.8-DIS		<input checked="" type="checkbox"/>	df - dis metals	
				17 SEL Analytes: SB AS BA BE CD CR CO CU PB MN MO NI SE AG TL V ZN				
				200.8-DIS-PR		<input type="checkbox"/>	df - dis metals	
				FILTER-PR		<input type="checkbox"/>	df - dis metals	
				HARD-2340B		<input checked="" type="checkbox"/>	df - dis metals	
				1 SEL Analytes: HARD				
1508302-005D				HG-DW-DIS-245.1		<input type="checkbox"/>	df - dis metals	
				HG-DW-DIS-PR		<input type="checkbox"/>	df - dis metals	
				PO4-W-4500PF		<input type="checkbox"/>	df -po4, no2/no3	1
				PO4-W-PR		<input type="checkbox"/>	df -po4, no2/no3	

## American West Analytical Laboratories

Chain of Custody

Lab Sample Set # 1508302

Page 1 of 1

Client: **Utah Division of Water Quality**Contact: **Lenora Sullivan**Address: **PO Box 144870**Phone: **801-536-4367**

Salt Lake City, UT 84114-4870

Fax: **801-536-4301**QC Level: **2+**Project Name: **Gold King Mine - San Juan River Sampling**Email: **lenoras@utah.gov**

TAT - ASAP

PO#:

jamesharris@utah.gov (please copy on results)

Sample ID:	Date Sampled	Time	# of Containers	Sample Matrix	Total Chemistry: pH, Alkalinity, Anions, TDS, TSS, Conductivity	Total TAL Metals + Mo + Hardness (200.7: Al, Ca, Fe, K, Mg, Na, 200.8: Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Mo, N, Ag, Se, Ti, V, Zn, 245.1: Hg)	Dissolved TAL Metals + Mo + Hardness (200.7: Al, Ca, Fe, K, Mg, Na, 200.8: Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Mo, N, Ag, Se, Ti, V, Zn, 245.1: Hg)	Total Nutrients: Phosphate, Nitrate&Nitrite	Comments	Laboratory Use Only
SAN JUAN R AT MEXICAN HAT US163 XING (4953000)	8.15.15	7:43	4	W	Y	Y	Y	Y	ROD containers for filtered dissolved metals	Samples Were: 1 Shipped or hand delivered 2 Ambient or Chilled 3 Temperature 2.9°C 4 Received Broken/Leaking (Improperly Sealed) Y N 5 Properly Preserved Y N 6 Received Within Holding Times Y N
SAN JUAN R AT SAND ISLAND (4953250)	8.15.15	10:30	4	W	Y	Y	Y	Y	Dissolved Metals samples have been field filtered. Samples collected from river monitoring following a mine waste dump release. Please flag any concentrations detected less than RL and at or greater than the MDL with a J qualifier. Please include EDD.	COC Tape Was: 1 Present on Outer Package Y N NA 2 Unbroken on Outer Package Y N NA 3 Present on Sample Y N NA 4 Unbroken on Sample Y N NA
San Juan River at Town of Montezuma	8.15.15	11:31	4	W	Y	Y	Y	Y		Discrepancies Between Sample Labels and COC Record? Y N
SAN JUAN R AT US160 XING IN CO (4954000)	8.15.15	12:04	4	W	Y	Y	Y	Y		
SJR @ CLAY HILL	8.15.15	14:30	4	W	Y	Y	Y	Y		

## Special Instructions:

Relinquished by: Signature	Date: 8/15/15	Received by: Signature	Date: 8/15/15
Print Name: JAMES HARRIS	Time: 18:41	Print Name: KYLE F. GROSS	Time: 18:41
Relinquished by: Signature	Date: 8/15/15	Received by: Signature	Date: 8/15/15
Print Name:	Time:	Print Name: Lenora Sullivan	Time: 18:42-21:05

Lenora Sullivan 21:20 8/15/15

Received by Kyle F. Gross 21:20h 8/15/15



## Preservation Check Sheet

Lab Sample Set #: **1508302**

**Metals: pH <2 HNO<sub>3</sub>**

-001	-002	-003	-004	-005											
YES	YES	YES	YES	YES											

**T PO<sub>4</sub>: pH <2 H<sub>2</sub>SO<sub>4</sub>**

-001	-002	-003	-004	-005											
YES	YES	YES	YES	YES											

**NO<sub>2</sub>/NO<sub>3</sub>**

-001	-002	-003	-004	-005											
- See Unpreserved Bottle -															